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# Interface reconstruction and sub-zone physics models

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## Disclaimer

# Interface reconstruction and sub-zone physics models *

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# Outline of presentation

- Review of code physics
  - Lagrangian hydro
  - Rezoning models
  - Multi-material setup
- Interface reconstruction
  - Cell decomposition
  - Iteration techniques
  - Priority ordering scheme
- Sub-zone physics models
  - Pressure equilibration
  - Temperature equilibration
  - $PdV$ work allocation
- Examples
- Summary and conclusions

## Code physics

- Lagrangian hydro
  - Regular mesh connectivity
  - Staggered grid (space and time)
  - Second order
- Thermal response
  - Electron and ion conduction
  - Electron-ion coupling
  - Radiative tranfer
- Material response
  - Equation of state
  - Chemistry
  - Strength and failure models
- Laser propagation
  - Absorption and refraction
  - Scattering

# ALE rezoning models

- Discrete:
  - Handles arbitrary mesh overlays
  - Employs triangular decomposition
  - Second order van Leer (pure zones)
  - First order (mixed cells)
  - Equi-potential smoothing by default
  - Substantially parallel

- Continuous:
  - Requires substantial mesh overlaps
  - Second order van Leer (pure zones)
  - Uses discrete re-map for mixed cells
  - High quality momentum re-map